Long Island Rail Road
MTA CONTRACT NO. 5-01-00032-0-0
ENVIRONMENTAL CONSULTANT SERVICES

Construction Excavation Work Plan

Manhasset: Site No. V00396-1, Index No. W1-0909-02-02

Massapequa: Site No. V00397-1, Index No. W1-0910-02-02

Island Park: Site No. V00392-1, Index No. W1-0908-02-02

October 2002

DVIRKA AND BARTILUCCI
CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

RLA/JOBS/MTA2015(10/04/02)

T. K.

METROPOLITAN TRANSPORTATION AUTHORITY

LONG ISLAND RAIL ROAD

CONSTRUCTION EXCAVATION WORK PLAN

for

MANHASSET, MASSAPEQUA AND ISLAND PARK SUBSTATIONS

Prepared for:

METROPOLITAN TRANSPORTATION AUTHORITY
LONG ISLAND RAIL ROAD

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OCTOBER 2002

CONSTRUCTION EXCAVATION WORK PLAN
FOR MANHASSET, MASSAPEQUA AND ISLAND PARK SUBSTATIONS

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Section 1

1.0 INTRODUCTION

The purpose of this Construction Excavation Work Plan is to describe the sample collection, analytical requirements and excavation procedures to be conducted in support of construction activities at three electric substations (Manhasset, Massapequa, and Island Park) owned and operated by the Long Island Rail Road (LIRR). It should be noted that the LIRR is investigating the Manhasset, Massapequa and Island Park substations (Site Nos. V-00396-1, V-00397-1 and V-00392-1, respectively) as part of a Voluntary Cleanup Agreement (VCA) with the New York State Department of Environmental Conservation (NYSDEC). The index numbers for these substations are W1-0909-02-02, W1-0910-02-02 and WI-0908-02-02, respectively.

The LIRR has initiated a long–term capital improvement project to upgrade several electric substations to accommodate the new "M-7" electric train cars that are scheduled to be in service in calendar year 2002-2003. The Manhasset and Massapequa substations will be renovated while an entirely new substation will be constructed at Island Park to the east of the existing substation building. Soil excavation is required to support the renovation and construction efforts at these three electric substations. This Construction Excavation Work Plan will detail the procedures for investigating the soil in the immediate vicinity of the excavation areas and summarize the soil excavation activities.

Section 2

2.0 PROJECT SUMMARY

2.1 Project Background

The LIRR constructed, operated and maintained substations from the early 1930s through 1951 that utilized mercury rectifiers. These rectifiers allowed the LIRR to receive 60-cycle, alternating current (AC) from local utilities and convert it to direct current (DC) for use as a source of electric power for its locomotives and electric passenger car fleet. The LIRR identified 20 substations located throughout Queens, Nassau and Suffolk Counties that once utilized mercury containing rectifiers.

It is believed that during the early 1980s, the remaining mercury rectifiers were taken out of service and physically removed from these LIRR substations and replaced with non-mercury containing solid state equipment. However, due to uncertainties surrounding the work practices that may have been employed when managing the operation and maintenance of these mercury rectifiers, the LIRR believed it necessary to conduct environmental assessments at these 20 electric substations to determine the potential effects that may have occurred to the surrounding environment.

The environmental assessments conducted at the electric substations, as documented by the report entitled, "Site Assessment of 20 Substations for Mercury Contamination," dated December 2000, which was prepared by Dvirka and Bartilucci Consulting Engineers, identified elevated levels of mercury in soil at all 20 substations.

Based on the findings of the Site Assessment activities, several substations were found to contain elevated levels of mercury in soil that had the potential to pose a human exposure pathway. As a result, an Interim Remedial Measures (IRM) program was conducted to eliminate the potential human exposure pathway by excavating mercury impacted soil for proper off-site transportation and disposal. IRM activities were performed at 11 substations including Valley Stream, Lindenhurst, Far Rockaway, Floral Park, Shea, Bayside, Port Washington, Massapequa,

Hempstead, Kew Gardens and Island Park. The IRM program is documented in the report entitled, "Site Assessment of 20 Substations for Mercury Contamination - Interim Remedial Measures Oversight Report," dated January 2001, which was prepared by Dvirka and Bartilucci Consulting Engineers.

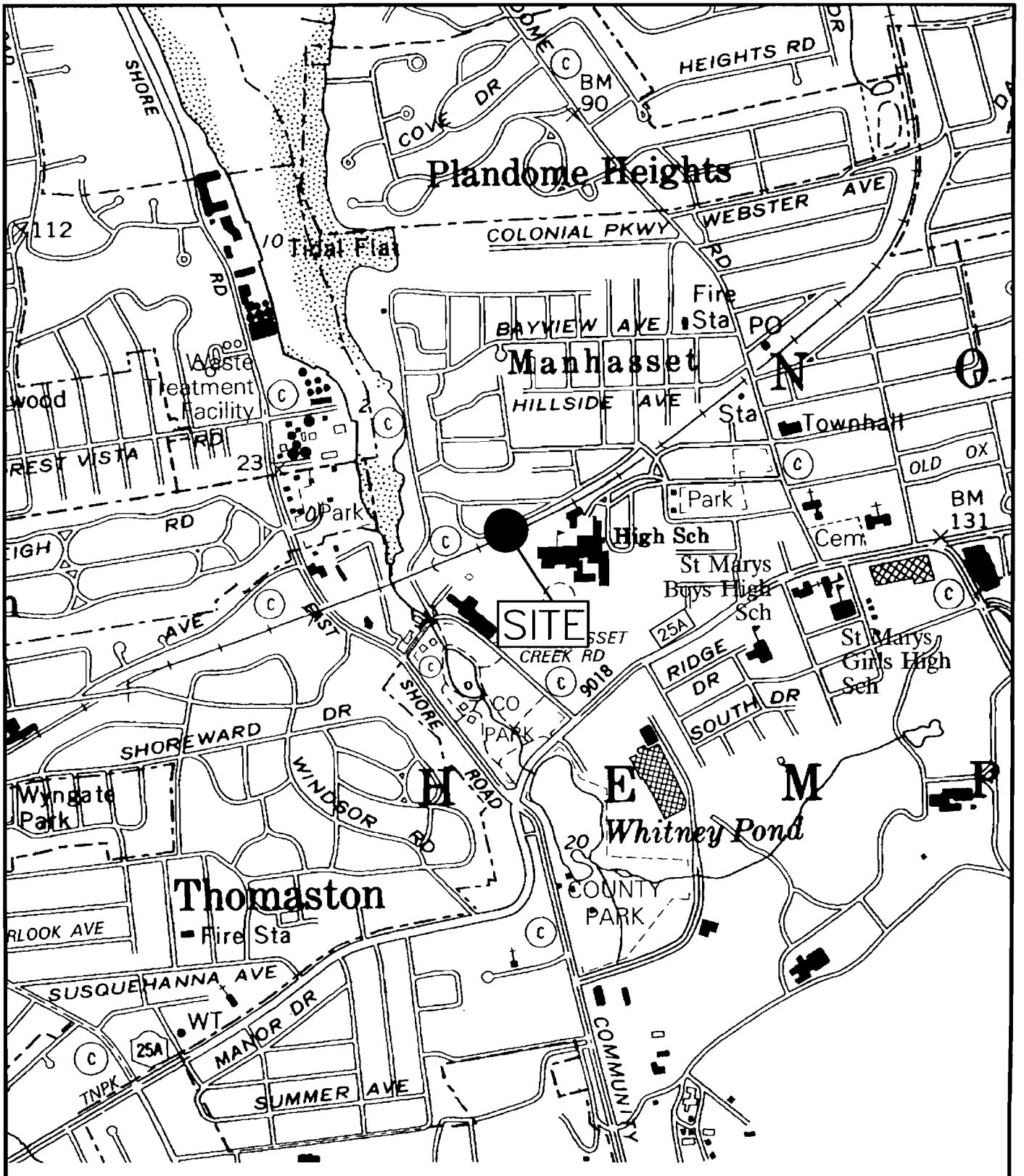
The LIRR has agreed to undertake and complete supplemental investigation/ delineation site assessments and remedial activities at the 20 substations under the NYSDEC Voluntary Cleanup Program (VCP). The NYSDEC, Division of Environmental Remediation, Bureau of Eastern Remedial Action, located in Albany, New York will provide oversight of site assessment and remedial activities conducted under the Voluntary Cleanup Program.

2.2 Site Description

Excavation activities in support of substation construction will be completed at the Manhasset, Massapequa, and Island Park substations. Provided below is a brief description of each substation:

2.2.1 Manhasset

The Manhasset substation site is located in Manhasset, Nassau County, New York (see Figure 2-1). The site consists of a 25-foot by 30-foot one-story brick building located within the LIRR right-of-way, 12 feet north of the existing train tracks as shown on Figure 2-2. A 30-foot by 30-foot transformer yard is located immediately east of the substation building and is secured by a perimeter chain-linked fence. The remaining portion of the site is a rectangular-shaped, partially developed, parcel of land. The substation complex is presently utilized to convert alternating current to direct current for the LIRR-Port Washington line. The areas surrounding the substation and the transformer yard are used for storage of equipment and supplies by the LIRR.



LONG ISLAND RAIL ROAD
DELINEATION PHASE 2 SITE ASSESSMENT

SITE LOCATION MAP
MANHASSET SUBSTATION–N10

FIGURE 2–1

Dvirka and Bartilucci Consulting Engineers
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LEGEND

FLOOR DRAIN (F.D.)

CHAIN LINK FENCE

APPROXIMATE GROUNDWATER FLOW DIRECTION

DRAINAGE SWALE

4 WOODEN R.R. TIES

FORMER RECTIFIER PIT

WATER TROUGH PIT

TRANSFORMER YARD

DRAIN THROUGH WALL

SLOP SINK

METAL PLATE COVERED CONDUIT PIT

METAL PLATE COVERED CONDUIT PIT

DRY WELL

EXISTING RAIL ROAD TRACK

0 5 10

SCALE IN FEET

SOURCES: AVAILABLE LONG ISLAND RAIL ROAD CONSTRUCTION DRAWINGS & D&B's FIELD OBSERVATIONS

Dvirka and Bartilucci
Consulting Engineers
A Division of William F. Cosulich Associates, P.C.

LONG ISLAND RAIL ROAD
DELINEATION PHASE 2 SITE ASSESSMENT
SITE PLAN

MANHASSET SUBSTATION – N10

FIGURE 2–2

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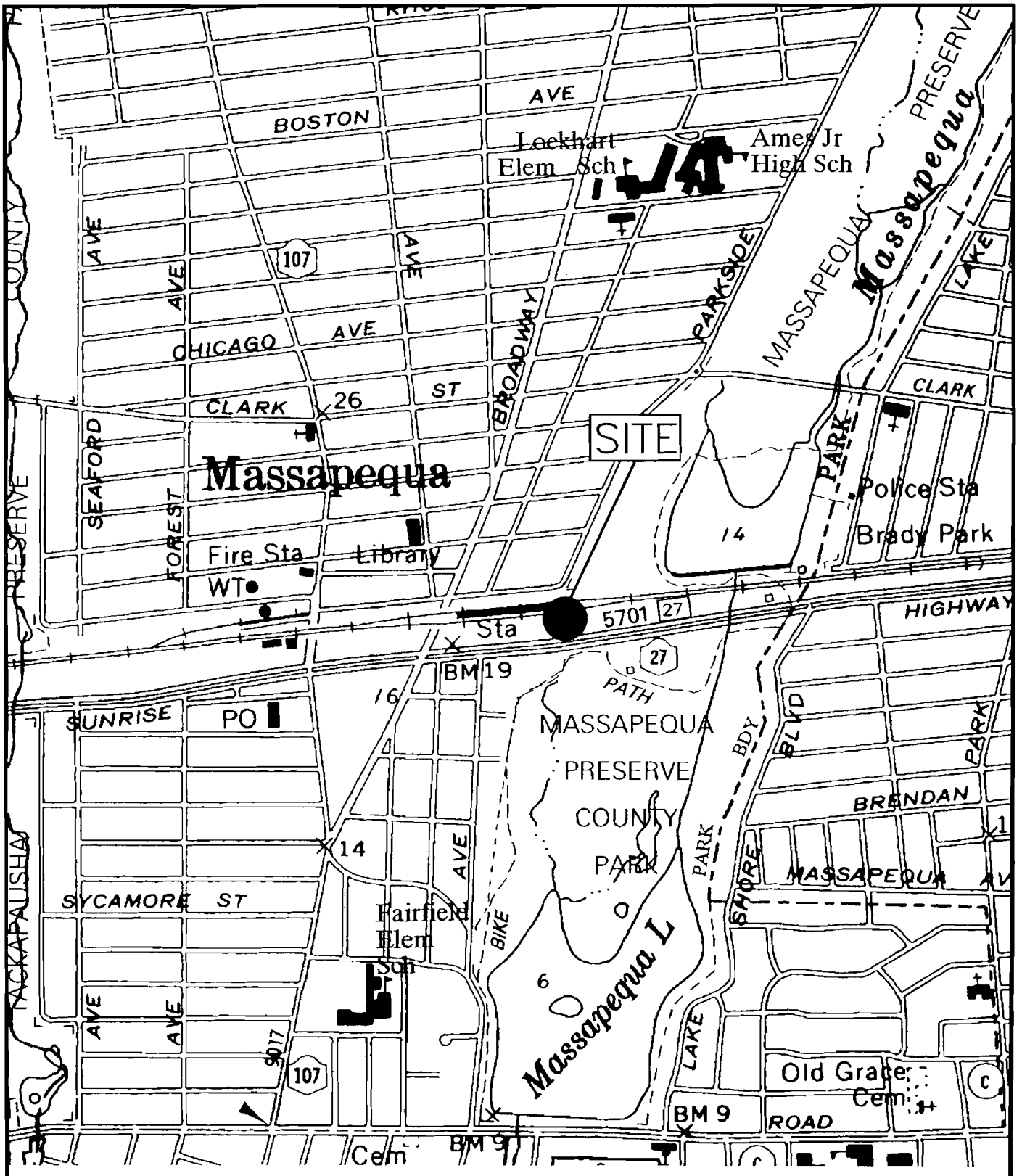
The Manhasset substation is not equipped with any sanitary or office facilities but is supplied with public water. The interior of the substation consists of an active solid-state rectifier located over a pit that once supported a mercury-containing rectifier. However, during the site inspection conducted by D&B on February 13, 2002, the solid-state rectifier had been removed in support of the ongoing overall capital improvement project for the Manhasset substation. The substation is also equipped with a second pit, referred to as a "water trough" on LIRR construction drawings, which is covered by a metal utility plate. During the initial site investigation conducted in 1999, D&B observed that the rectifier pit contained one floor drain and the water trough contained two floor drains. In addition, the Manhasset substation was equipped with a slop sink along the eastern substation wall that discharged to the transformer yard located to the east of the substation. The Manhasset substation does not have a basement or a utility trench system. It should also be noted that the substation contains a bank of active lead-acid batteries located in the northwest corner of the substation to provide back-up electricity for the switch equipment in the event of a power failure.

During the initial site investigation, D&B observed that storm water drainage from the substation property is conveyed to an existing storm water drainage system. The storm water drainage system originates from an elevated area to the south of the substation and the LIRR right-of-way and is conveyed via a concrete pipe which extends to the north running under the tracks. The concrete pipe discharges to a corrugated pipe, approximately 80 feet to the east of the substation. The corrugated pipe conveys flows in a westerly direction and discharges to a drainage swale located immediately to the west of the substation. Storm water continues to flow west along the northern boundary of the substation approximately 800 feet, down an embankment to the headwaters of Manhasset Bay.

2.2.2 Massapequa

The Massapequa substation site is located in Massapequa, Nassau County, New York (see Figure 2-3). The site consists of an approximately 625 square foot one-story brick building as shown in Figure 2-4. An approximately 2,500 square foot transformer yard is located adjacent



LONG ISLAND RAIL ROAD
DELINEATION PHASE 2 SITE ASSESSMENT

SITE LOCATION MAP
MASSAPEQUA SUBSTATION–S15

Dvirka and Bartilucci
Consulting Engineers
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FIGURE 2–3

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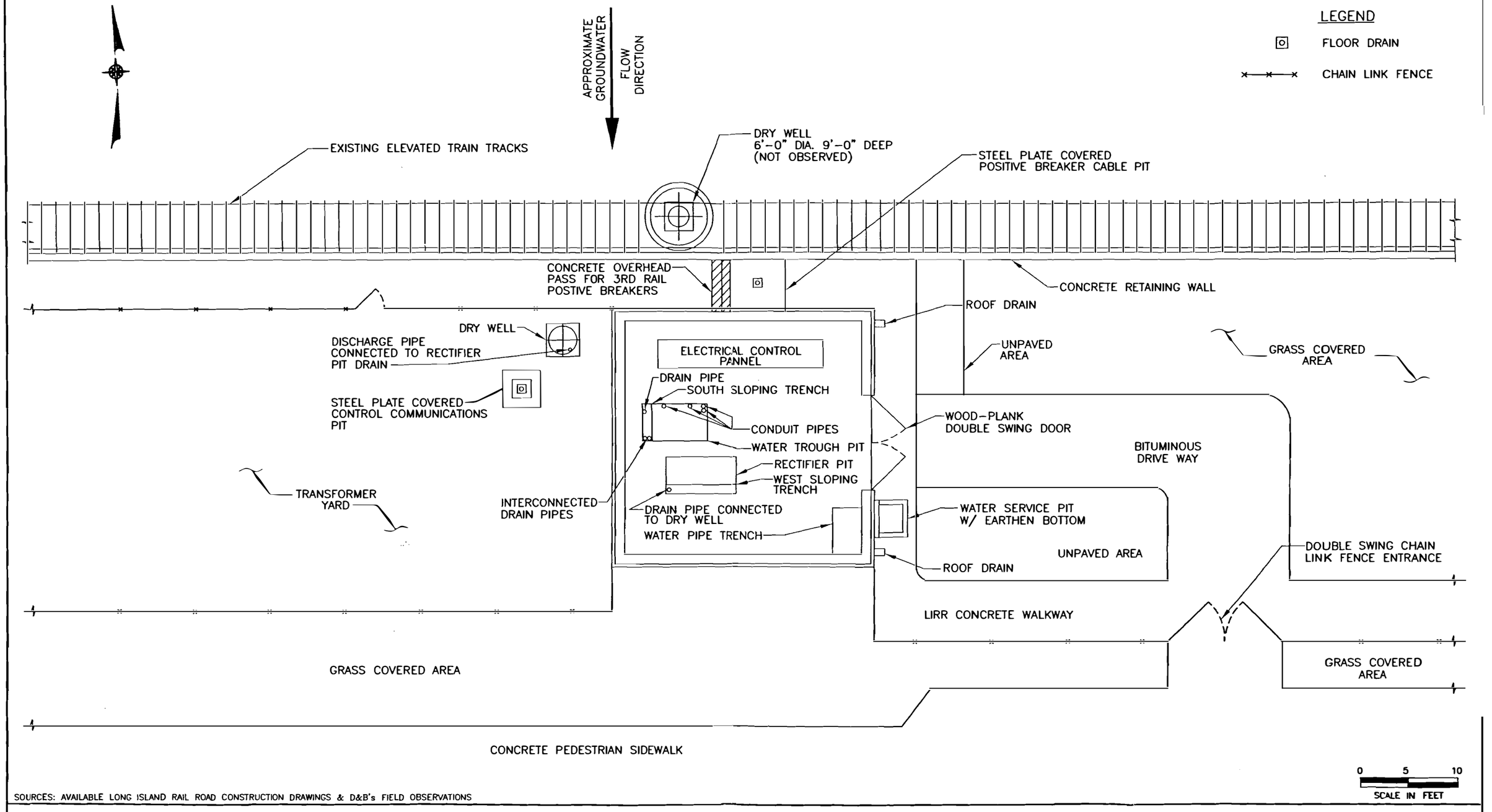

SOURCES: AVAILABLE LONG ISLAND RAIL ROAD CONSTRUCTION DRAWINGS & D&B's FIELD OBSERVATIONS

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LONG ISLAND RAIL ROAD
DELINEATION PHASE 2 SITE ASSESSMENT
SITE PLAN

MASSAPEQUA SUBSTATION – S15

FIGURE 2-4

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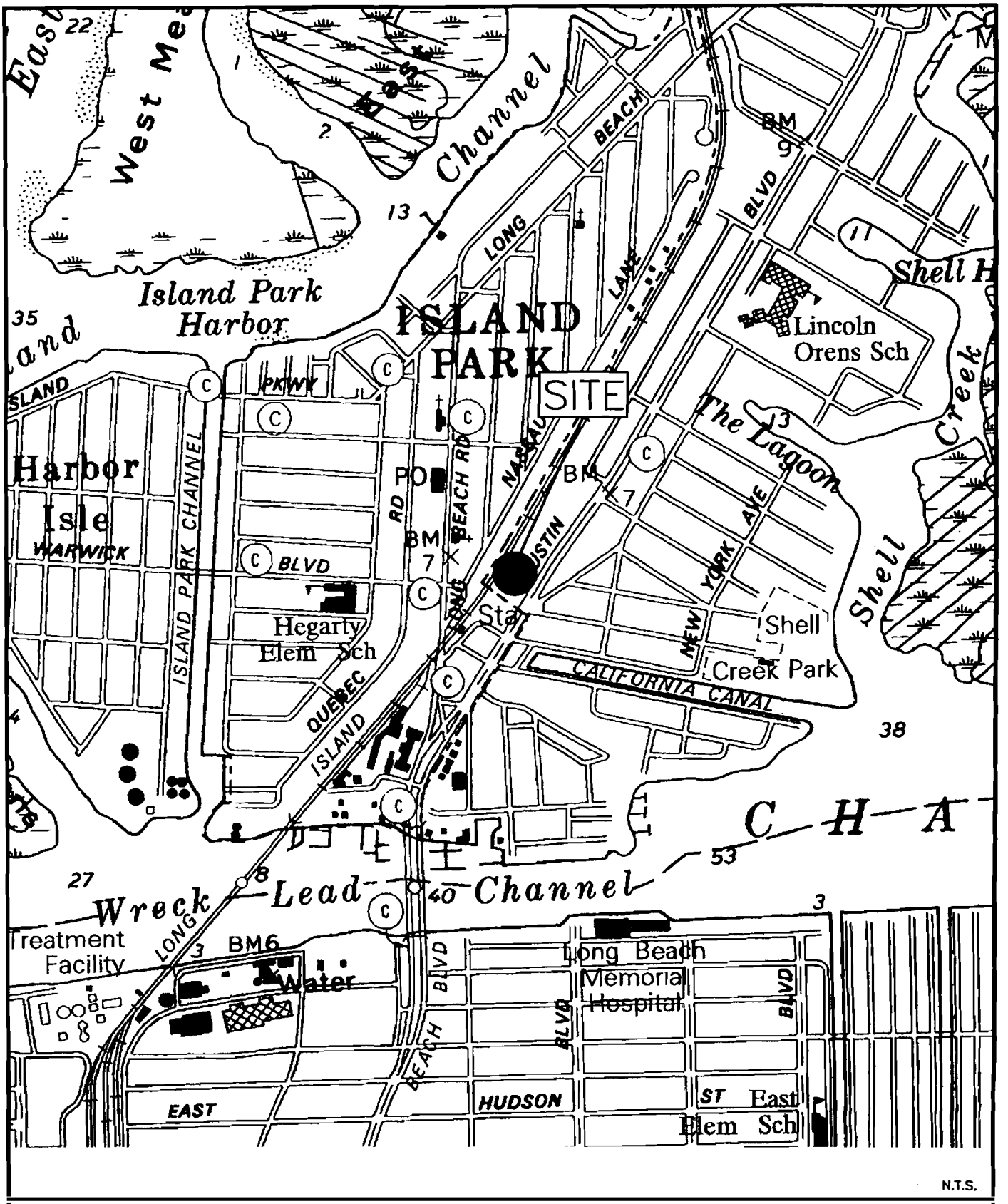
to the substation to the west and is secured by a perimeter chain-linked fence. The substation complex is presently utilized to convert alternating current to direct current for the LIRR-Montauk line. The areas surrounding the substation and the transformer yard are currently utilized as vehicular parking and pedestrian traffic areas.

The Massapequa substation is not equipped with a basement or any sanitary and office facilities. The interior of the substation consists of an active solid-state rectifier located over a pit that once supported a mercury-containing rectifier. The substation is also equipped with a second pit, referred to as a water trough on LIRR construction drawings. In addition, the substation contains a water pipe trench with a concrete bottom located in the southeast corner of the substation.

The site investigation conducted by D&B in 1999 revealed the presence of a water service pit with an earthen bottom located off the southeast corner of the substation. A dry well with a solid cover was also observed off the northwest corner of the substation located within the transformer yard. In addition, a steel plate-covered control communications pit, containing a floor drain, was located within the transformer yard. It should be noted that there was a cable within the communications pit that was coated with a material that resembled asbestos. A steel plate covered positive cable pit containing a floor drain was also observed along the north side of the substation. Available LIRR construction drawings indicate that a dry well is located approximately 10 feet north of the substation. However, this dry well, if present, would currently be located beneath the existing railroad tracks.

2.2.3 Island Park

The Island Park substation site is located in Island Park, Nassau County, New York (see Figure 2-5). The site consists of an approximately 1,800 square foot one-story brick building as shown on Figure 2-6. An approximately 3,000 square foot transformer yard is located adjacent to the substation to the northeast and is secured by a perimeter chain-linked fence. The substation complex is presently utilized to convert alternating current to direct current for the LIRR-Long



LONG ISLAND RAIL ROAD
DELINEATION PHASE 2 SITE ASSESSMENT

SITE LOCATION MAP
ISLAND PARK SUBSTATION–L03

Dvirka and Bartilucci Consulting Engineers
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FIGURE 2–5

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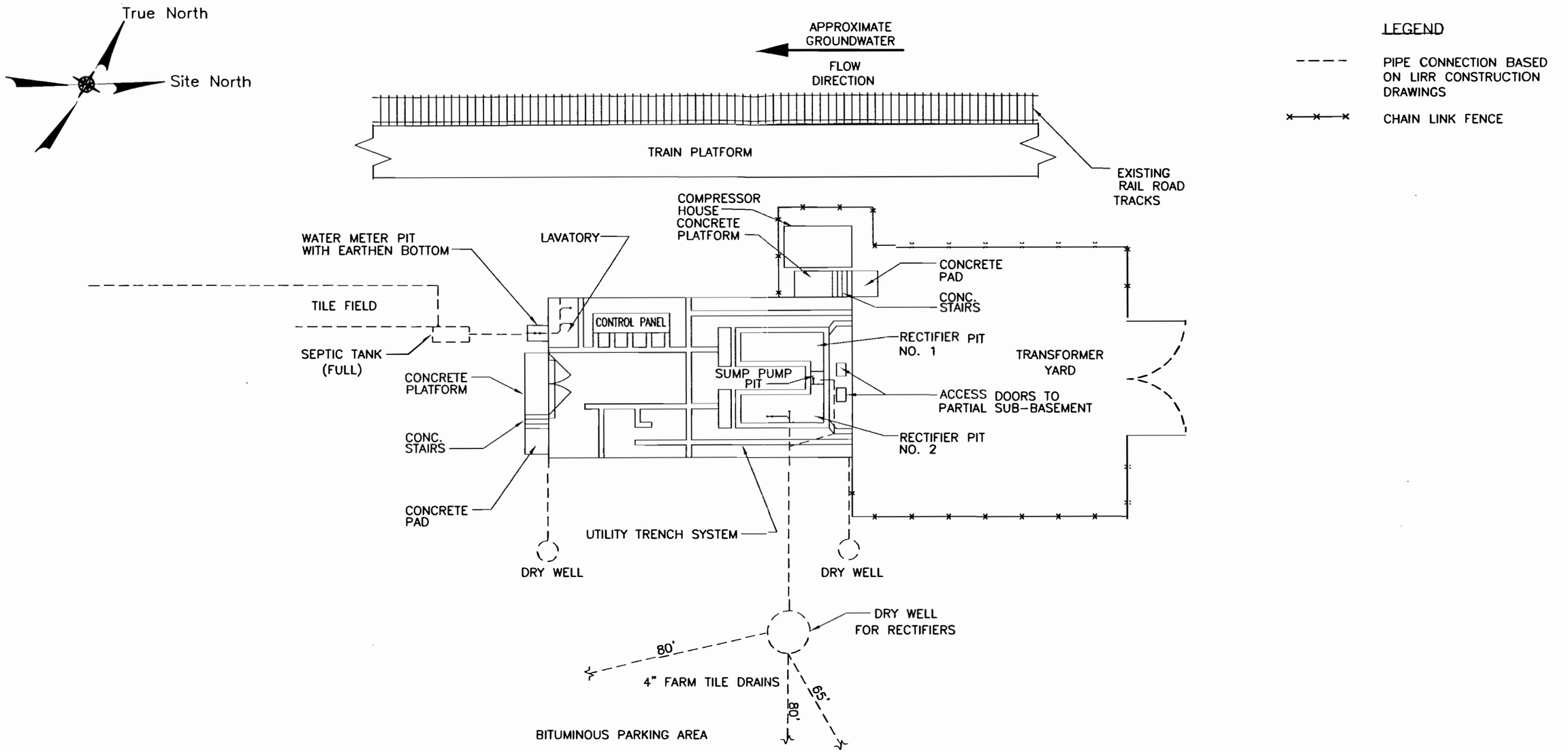

SOURCES: AVAILABLE LONG ISLAND RAIL ROAD CONSTRUCTION DRAWINGS & D&B's FIELD OBSERVATIONS

LONG ISLAND RAIL ROAD
DELINEATION PHASE 2 SITE ASSESSMENT
SITE PLAN

ISLAND PARK SUBSTATION –L03

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FIGURE 2-6

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Beach line. The areas surrounding the substation and the transformer yard are currently utilized for vehicular parking.

It is important to note that during the initial site inspection conducted by D&B in 1999, the septic tank located to the southwest of the substation was full of sanitary waste. In addition, the on-site LIRR representatives indicated to D&B that there have been problems with the sanitary system overflowing onto the adjacent parking lot in the past.

The Island Park substation contains a basement, sanitary facilities, water service and a utility trench system. The interior of the substation consists of two active solid-state rectifiers located over two separate pits leading to the basement. These pits once supported the mercury-containing rectifiers. In addition, there is a water meter pit with an earthen bottom that is covered with a steel plate located off the northwest corner of the substation as shown in Figure 2-6.

Section 3

3.0 SCOPE OF WORK

The overall Work Plan, which will be implemented at each substation, is organized into the following three tasks:

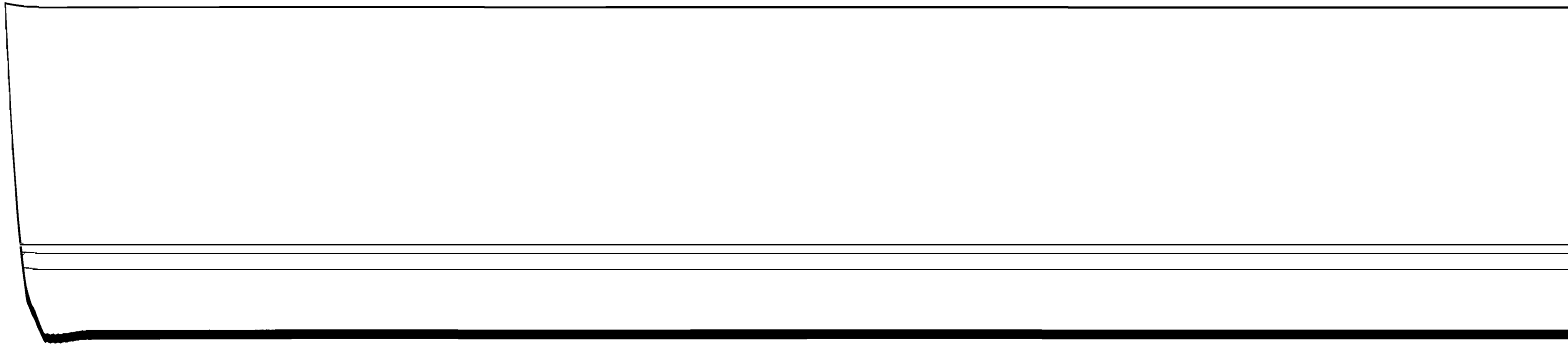
Task 1 – Soil Investigation and Waste Characterization;
Task 2 – Soil Excavation; and
Task 3 – Draft/Final Report.

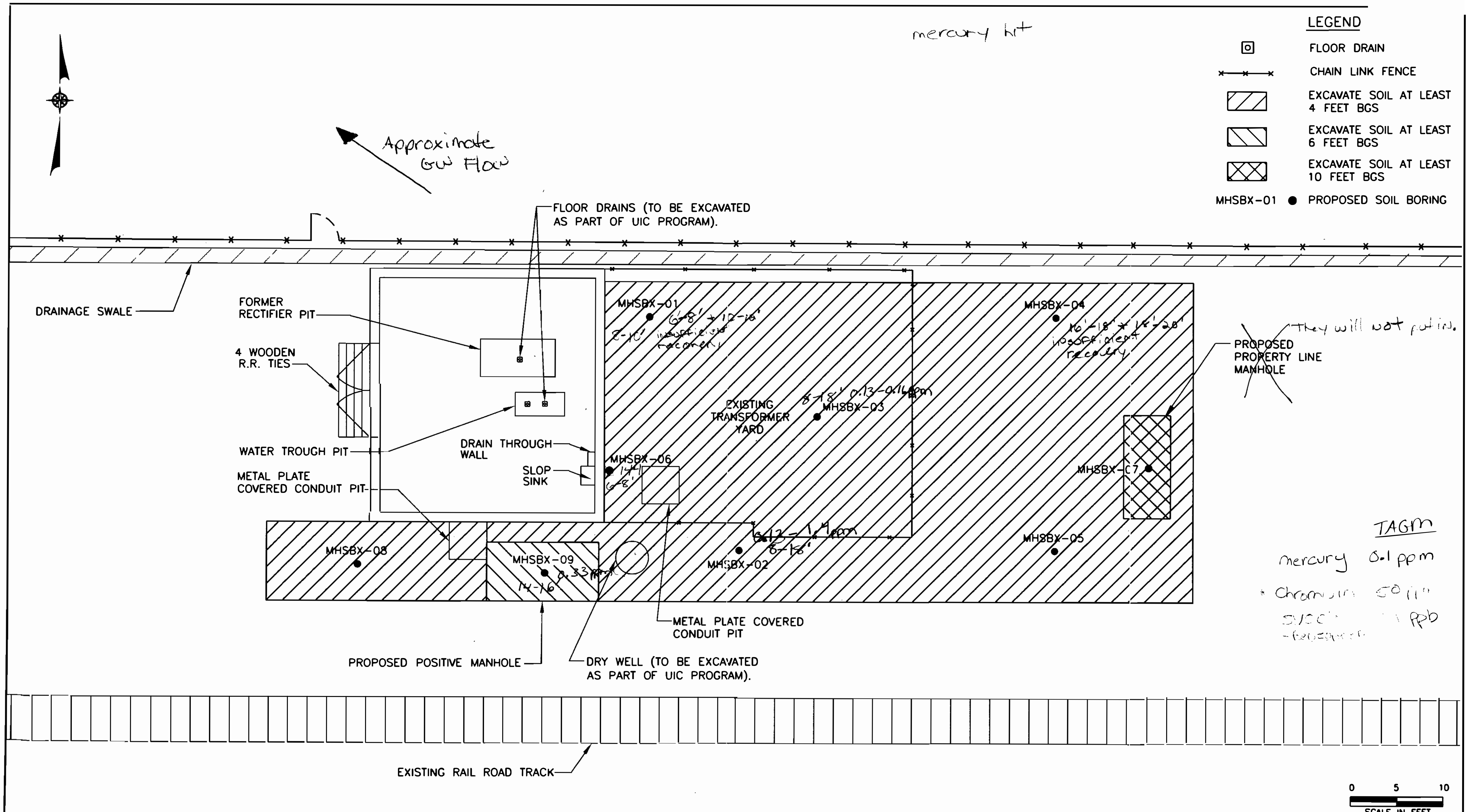
3.1 Task 1 - Soil Investigation and Waste Characterization

3.1.1 Soil Investigation

Soil probes will be advanced within the areas proposed for construction excavation at each substation to determine the soil quality beneath the vertical limit of excavation. These soil probes will be advanced prior to soil excavation activities. Soil probe locations are shown on Figures 3-1, 3-2 and 3-3 for the Manhasset, Massapequa and Island Park substations, respectively. A summary of the soil samples to be collected and laboratory analysis is summarized on Tables 3-1 through 3-3 for the Manhasset, Massapequa and Island Park substations, respectively. Soil samples will be analyzed for PCBs (EPA Method 8082), RCRA Metals (EPA Method 6010/7471), and semi-volatile organic compounds (SVOCs) (EPA Method 8270). It should be noted that soil samples will be screened with a photoionization detector (PID) and a Jerome mercury analyzer. Based on the PID readings and field observations, soil samples may also be analyzed for volatile organic compounds (VOCs) by EPA Method 8260. All laboratory samples will be analyzed on a two-week accelerated turn-around basis.

It is important to note that the NYSDEC will review all analytical results generated as part of this Construction Excavation Work Plan. In addition, the excavation areas will not be backfilled until the NYSDEC has formally approved the sampling results.





SOURCES: AVAILABLE LONG ISLAND RAIL ROAD CONSTRUCTION DRAWINGS & D&B's FIELD OBSERVATIONS

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LONG ISLAND RAIL ROAD
CONSTRUCTION EXCAVATION WORK PLAN
SAMPLE LOCATION AND EXCAVATION MAP

MANHASSET SUBSTATION – N10

FIGURE 3-1

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Mercury 0.1 ppm

LEGEND

- FLOOR DRA
- CHAIN LINK
- EXCAVATE SOIL AT LEAST 4 FEET BGS
- EXCAVATE SOIL AT LEAST 5 FEET BGS
- EXCAVATE SOIL AT LEAST 9 FEET BGS
- MSSBX-01 ● PROPOSED SOIL BORING

DRY WELL (TO BE EXCAVATED AS PART OF UIC PROGRAM)

STEEL PLATE COVERED POSITIVE BREAKER CABLE PIT

EXISTING ELEVATED TRAIN TRACKS

DRY WELL 6'-0" DIA. 9'-0" DEEP (NOT OBSERVED)

STEEL PLATE COVERED CONTROL COMMUNICATIONS PIT

MSSBX-08

CONCRETE RETAINING WALL

PROPOSED PROPERTY LINE MANHOLE

MSSBX-01

MSSBX-07

MSSBX-04

0.005ppm 4-6' mercury

ELECTRICAL CONTROL PANNEL

UNPAVED AREA

WATER TROUGH PIT

MSSBX-03

RECTIFIER PIT

BITUMINOUS DRIVE WAY

MSSBX-06

0.13ppm 6-8'

EXISTING TRANSFORMER YARD

MSSBX-02

MSSBX-05

MSSBX-09

MSSBX-10

0.63ppm 8-10'

UNPAVED AREA

LIRR CONCRETE WALKWAY

PROPOSED NEGATIVE MANHOLE

GRASS COVERED AREA

CONCRETE PEDESTRIAN SIDEWALK

0 5 10

SCALE IN FEET

SOURCES: AVAILABLE LONG ISLAND RAIL ROAD CONSTRUCTION DRAWINGS & D&B's FIELD OBSERVATIONS

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LONG ISLAND RAIL ROAD
CONSTRUCTION EXCAVATION WORK PLAN
SAMPLE LOCATION AND EXCAVATION MAP

MASSAPEQUA SUBSTATION – S15

FIGURE 3-2

True North

Site North

LEGEND

- PIPE CONNECTION BASED ON LIRR CONSTRUCTION DRAWINGS
- CHAIN LINK FENCE
- EXCAVATE SOIL AT LEAST 4
- EXCAVATE SOIL AT LEAST 6 FEET BGS
- EXCAVATE SOIL AT LEAST 8 FEET BGS
- EXCAVATE SOIL AT LEAST 10 FEET BGS
- IPSBX-01 ● PROPOSED SOIL BORING

EXISTING RAIL ROAD TRACKS

TRAIN PLATFORM

IPSBX-10

MG SET

EXISTING TRANSFORMER YARD

8-20' insufficient recovery

NEW MANHOLE

IPSBX-11

IPSBX-12

4-6' Benzo(a)pyrene 80-83 ppb

4-6' Arsenic 27.7 ppm

TILE FIELD

SEPTIC TANK

EXISTING SUBSTATION

DRY WELL (IF ACTIVE AND ENCOUNTERED DURING EXCAVATION, UIC CLOSURE MAY BE WARRANTED)

CONC ISLAND

NEW DRY WELL IPSBX-03

0.25 ppm 14-16'

12-18' phenol 78-1410 ppm

8-10' Arsenic 23.1 ppm

IPSBX-09

14-16' Arsenic 13.7 ppm

IPSBX-01

DRY WELL (IF ACTIVE AND ENCOUNTERED DURING INVESTIGATION, UIC CLOSURE MAY BE WARRANTED)

12-20' phenol 110-840 ppb

0.12 ppm 8-10'

IPSBX-02

14-16' phenol 60 ppb

IPSBX-04

8-20' Phenol 100-346 ppb

4-6' Arsenic 16.2 ppm

NEW SUBSTATION

IPSBX-05

10-12' Phenol 2600 ppb

DRY WELL FOR RECTIFIERS (IF ACTIVE AND ENCOUNTERED DURING EXCAVATION, UIC CLOSURE MAY BE WARRANTED)

BITUMINOUS PARKING AREA

SVOC hit's

(100 ppb) 12-18' 2 methyl phenol 240-3,300 ppb

(13,000 ppb) 6-14' Naphthalene 24,000-43,000 ppb

(224 ppb) 4-6' + 14-16' Benzo(a)anthracene 326-500 ppb

(400 ppb) 4-6' Chrysene 530 ppb

(61 ppb) 4-6' Benzo(a)pyrene 400 ppb

IPSBX-08

8-10' Arsenic 13.8 ppm

IPSBX-07

14-20' Phenol 910-2500 ppb

8-10' Arsenic 17.2 ppm

10-12' insufficient recovery

IPSBX-06

CONC ISLAND

6-8' Benzo(a)Pyrene 86 ppb

16-20' Phenol 640-870 ppb

8-10' Arsenic 12.5 ppb

TAGM

mercury 0.1 ppm

SVOCs various

Arsenic 12 ppm

(30 ppb) Phenol

0 15 30

SCALE IN FEET

SOURCES: AVAILABLE LONG ISLAND RAIL ROAD CONSTRUCTION DRAWINGS & D&B's FIELD OBSERVATIONS

LONG ISLAND RAIL ROAD
CONSTRUCTION EXCAVATION WORK PLAN
SAMPLE LOCATION AND EXCAVATION MAP

ISLAND PARK SUBSTATION –L03

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FIGURE 3-3

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TABLE 3-1
Long Island Rail Road
CONSTRUCTION EXCAVATION WORK PLAN
Sampling and Analysis Summary
Manhasset Substation - N10

Location	Sample Point ID	SOIL PROBES		Soil Sampling Interval	Recommended Analyses		
		No. of Probes	No. of Geoprobe Samples		RCRA Metals	PCBs	SVOCs
Existing Transformer Yard	MHSBX-01	1	8	4'-20' bgs Cont.	8	8	8
	MHSBX-02	1	8	4'-20' bgs Cont.	8	8	8
	MHSBX-03	1	8	4'-20' bgs Cont.	8	8	8
	MHSBX-04	1	8	4'-20' bgs Cont.	8	8	8
	MHSBX-05	1	8	4'-20' bgs Cont.	8	8	8
	MHSBX-06	1	3	4'-10' bgs Cont.	3	3	3
Property Line Manhole	MHSBX-07	1	5	10'-20' bgs Cont.	5	5	5
South of Existing Substation	MHSBX-08	1	8	4'-20' bgs Cont.	8	8	8
Positive Manhole	MHSBX-09	1	7	6'-20' bgs Cont.	7	7	7

NOTES:

bgs: below ground surface.

Cont.: Continuous 2-foot soil sampling

TABLE 3-2
Long Island Rail Road
CONSTRUCTION EXCAVATION WORK PLAN
Sampling and Analysis Summary
Massapequa Substation - S15

Location	Sample Point ID	SOIL PROBES		Soil Sampling Interval	Recommended Analyses		
		No. of Probes	No. of Geoprobe Samples		RCRA Metals	PCBs	SVOCs
Existing Transformer Yard	MSSBX-01	1	8	4'-20' bgs Cont.	8	8	8
	MSSBX-02	1	8	4'-20' bgs Cont.	8	8	8
	MSSBX-03	1	8	4'-20' bgs Cont.	8	8	8
	MSSBX-04	1	8	4'-20' bgs Cont.	8	8	8
	MSSBX-05	1	8	4'-20' bgs Cont.	8	8	8
	MSSBX-06	1	3	4'-10' bgs Cont.	3	3	3
Property Line Manhole	MSSBX-07	1	8	4'-20' bgs Cont.	8	8	8
North of Existing Substation	MSSBX-08	1	8	4'-20' bgs Cont.	8	8	8
Negative Manhole	MSSBX-09	1	8	4'-20' bgs Cont.	8	8	8
South of Existing Substation	MSSBX-10	1	8	4'-20' bgs Cont.	8	8	8

NOTES:

bgs: below ground surface.

Cont.: Continuous 2-foot soil sampling

TABLE 3-3
Long Island Rail Road
CONSTRUCTION EXCAVATION WORK PLAN
Sampling and Analysis Summary
Island Park Substation - L03

Location	Sample Point ID	SOIL PROBES		Soil Sampling Interval	Recommended Analyses		
		No. of Probes	No. of Geoprobe Samples		RCRA Metals	PCBs	SVOCs
South Trench	IPSBX-01	1	8	4'-20' bgs Cont.	8	8	8
South Dry Well	IPSBX-02	1	7	6'-20' bgs Cont.	7	7	7
North Dry Well	IPSBX-03	1	7	6'-20' bgs Cont.	7	7	7
New Substation	IPSBX-04	1	8	4'-20' bgs Cont.	8	8	8
New Substation - Cable Vault	IPSBX-05	1	5	10'-20' bgs Cont.	5	5	5
New Substation	IPSBX-06	1	8	4'-20' bgs Cont.	8	8	8
New Substation	IPSBX-07	1	8	4'-20' bgs Cont.	8	8	8
East Trench	IPSBX-08	1	8	4'-20' bgs Cont.	8	8	8
East Trench	IPSBX-09	1	8	4'-20' bgs Cont.	8	8	8
New Manhole	IPSBX-10	1	6	8'-20' bgs Cont.	6	6	6
North Trench	IPSBX-11	1	8	4'-20' bgs Cont.	8	8	8
North Trench	IPSBX-12	1	8	4'-20' bgs Cont.	8	8	8

NOTES:
bgs: below ground surface.
Cont.: Continuous 2-foot soil sampling

Quality Assurance/Quality Control (QA/QC) samples will be collected as part of this task. One set of QA/QC samples, consisting of a matrix spike, matrix spike duplicate and field blank will be collected and analyzed for every 20 environmental samples collected in the field. In addition, the QA/QC plan presented as part of the Investigation Work Plan, dated September 2002, will be followed throughout the execution of this Construction Excavation Work Plan.

All sample analysis and data validation will be conducted in accordance with the New York State Department of Environmental Conservation June 2000 Analytical Services Protocol (ASP). All other information not provided in this scope of work, such as detailed sampling procedures and protocols, is included in the document entitled, "Investigation Work Plan – Delineation Phase 2 Site Assessment for Manhasset, Massapequa and Island Park Substations," dated July 2002.

3.1.2 Waste Characterization

In-situ composite waste characterization samples will be collected by the LIRR's Contractor from within the construction excavation areas. The soil sample locations for the composite waste characterization samples will be determined in the field by the LIRR's Contractor. Waste characterization analysis will include, but not be limited to, conducting the Toxicity Characteristic Leaching Procedure (TCLP) for RCRA constituents (i.e., metals and organics) and total analysis for mercury. In addition, all necessary sampling and analysis that is required by the disposal facility will be conducted by the LIRR's Contractor. Laboratory analysis will be conducted by a New York State ELAP-approved and ASP-certified laboratory.

3.2 Task 2 - Soil Excavation

3.2.1 Soil Excavation Scope of Work

Soil identified on Figures 3-1 through 3-3 for the Manhasset, Massapequa and Island Park substations, respectively, will be excavated for proper off-site transportation and disposal. The LIRR's Contractor will be responsible for conducting all excavation activities, collecting

and analyzing all waste characterization samples, loading and transporting excavated material for off-site disposal, backfilling all excavated areas and restoring all areas affected by the excavation activities. The use of excavating machinery will be permitted, except in places where the operation of such machinery will cause damage to adjacent property, buried utilities, structures or completed work, in which case hand excavation methods will be employed. The excavation activities will be carried out in such a manner as to prevent undermining or disturbing the foundations of existing structures. The LIRR's Contractor will provide and maintain suitable safeguards (i.e., snow fence and flashing barricades) around any open excavation until the excavation is restored to grade.

The excavation immediately to the west of the Massapequa substation will continue to a depth that will not compromise the structural integrity of the building in an attempt to locate the discharge point of two drain pipes.

It should be noted that if groundwater is encountered during soil excavation (non-UIC areas), a groundwater sample will only be collected if there are indications of contamination (i.e., odors, staining, product, etc.).

The LIRR will also retain an Engineer to provide oversight during all excavation field activities. The Engineer will conduct ambient air monitoring during the excavation activities. The Engineer will monitor the breathing zone utilizing a Photoionization Detector (PID) and a Jerome Mercury Analyzer in the vicinity of the excavation.

3.2.2 Health and Safety

Prior to the initiation of the project, the LIRR's Contractor will prepare a site-specific Health and Safety Plan (HASP). The Health and Safety Plan will properly address appropriate federal, state and local regulatory requirements necessary to undertake and successfully complete this project. The HASP will include a hospital route map and written directions to the nearest hospital. The Contractor will also provide appropriate emergency phone numbers.

Particulate concentrations will be monitored continuously at the upwind and downwind perimeters of the exclusion zone in accordance with the New York State Department of Health (NYSDOH) generic Community Air Monitoring Plan (CAMP) as described by the August 2002 site-specific HASP and subsequent addenda.

The LIRR's Contractor will be responsible for ensuring that the Health and Safety Plan and all work associated with this project is performed in accordance with safe work practices, including all Occupational Safety and Health Administration (OSHA) requirements. All site personnel will have hazardous waste operations and emergency response (HAZWOPER) training in accordance with 29 CFR 1910.120, will be certified for confined space entry (if necessary), will be trained and certified in the proper use of personal protective equipment (PPE), and will have knowledge and understanding of construction standards.

3.2.3 Decontamination

The LIRR's Contractor will be responsible for decontaminating excavation and heavy equipment, including shovels and buckets, prior to mobilizing to the site and use during the work. The LIRR's Contractor will either steam clean and manual scrub brush and/or wash the equipment. The excavation equipment will be decontaminated before and after this excavation and backfilling project and prior to leaving the site.

The LIRR's Contractor will collect all decontamination waste in 55-gallon DOT-approved drums or a suitable alternative. The LIRR's Contractor will be responsible for conducting waste characterization sampling and analysis of the decontamination waste. The LIRR's Contractor will be responsible for the proper off-site transportation and disposal of all decontamination waste generated during this project.

3.2.4 Backfilling

The backfill material will be certified clean fill approved prior to its use. Clean fill will originate from a known non-industrial site that does not have chemical constituents present in concentrations greater than NYSDEC soil cleanup guidance values pursuant to TAGM No. 4046.

Fill material, other than that which originates from a mine, will be demonstrated to be clean by having one grab sample and one composite sample collected for every 500 cubic yards of material. These samples will be analyzed, on a total constituent basis, for the following classes of compounds: VOCs (Method 8260), SVOCs (Method 8270), priority pollutant metals (Methods 6010/7471), pesticides (Method 8081), and PCBs (Method 8082). Sample results will be conducted by a NY State ELAP-approved and ASP-certified laboratory.

If the fill material originates from a mining operation, it may be accompanied by a Certificate of Clean Fill from the mining company in lieu of the sampling described above, except that one composite sample of the fill will be collected and analyzed prior to use for the compounds listed above. The certificate will be signed by an officer of the mining company or its designee.

The backfill will consist of mostly coarse sandy material (containing no organic material, rubbish or debris) capable of being compacted to a relative compaction of 90 percent. The backfill material will be compacted in maximum 8-inch loose layers. The LIRR's Contractor will backfill each excavation to within 6 inches of grade with certified clean fill.

3.3 Task 3 - Draft/Final Report

As part of this task, a report will be prepared for all three substation sites that will document the findings of the project and will summarize all field activities. The draft and final report will include site drawings, analytical results, and a site location map. In addition, the report will include a copy of all waste manifests for all material excavated and transported for disposal.